

## WE CLAIM:

1. A radio communications device comprising:
  - 5 a processor;
  - radio frequency communications circuitry coupled to said processor;
  - a ground plane;
  - a radio frequency radiator element;
  - 10 a feed point electrically coupling the radio frequency radiator element to the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element;
  - 15 a first ground connector electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first ground contact point of the radio frequency radiator element;
  - 20 a switching unit; and
  - a second ground connector selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, the second ground connector electrically coupling the radio frequency radiator element at a
  - 25 second ground contact point of the radio frequency radiator element, wherein in use the switching unit selectively couples the frequency radiator element to the ground plane depending upon desired operating frequency bands for the radio frequency radiator element.

2. A radio communications device as claimed in claim 1, wherein the first ground contact point is proximal to a first edge of the radio frequency radiator element.

5           3. A radio communications device as claimed in claim 2, wherein the second ground contact point is proximal to a second edge of the radio frequency radiator element.

10           4. A radio communications device as claimed in claim 1, wherein the feed contact point and second ground contact point are coupled at respective locations on the radio frequency radiator element so that when the second ground connector selectively couples the passive radiator element to the ground plane through the switching unit, the impedance of the radio frequency radiator element is  
15 substantially impedance matched to the radio frequency communications circuitry.

20           5. A radio communications device as claimed in claim 1, wherein the feed contact point and first ground contact point are coupled at respective locations on the radio frequency radiator element so that when the second ground connector is electrically isolated from the ground plane by the switching unit, and the first ground connector is electrically coupling the radio frequency radiator element to the ground plane, the impedance of the radiator element is substantially  
25 impedance matched to the radio frequency communications circuitry.

6. A radio communications device as claimed in claim 1, wherein the first ground connector provides a permanent electrical coupling of the radio frequency radiator element to the ground plane,

and wherein when the second ground connector electrically couples the radio frequency radiator element to the ground plane through the switching unit, the first ground connector also electrically couples radio frequency radiator element to the ground plane.

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7. A radio communications device as claimed in claim 1, wherein when the second ground connector is electrically isolated from the ground plane by the switching unit, the radio frequency radiator element provides for a first resonant frequency of substantially 850  
10 MHZ and a second resonant frequency of 1,800 MHZ.

8. A radio communications device as claimed in claim 7, wherein when the second ground connector is electrically coupled to the ground plane by the switching unit, the radio frequency radiator  
15 element provides for a third resonant frequency of substantially 900 MHZ and a fourth resonant frequency of 1,900 MHZ.

9. A radio communications device as claimed in claim 1, wherein when the second ground connector is electrically isolated from the ground plane by the switching unit, the ground plane has a longer  
20 effective length than when the ground connector is electrically coupled to the ground plane by the switching unit.

10. A radio communications device as claimed in claim 1, wherein when the second ground connector is electrically isolated from the ground plane by the switching unit, an effective length between the  
25 feed contact point and the ground plane is increased compared to when the second ground connector is electrically coupled to the ground plane by the switching unit.

11. A radio communications device as claimed in claim 1, wherein the switching unit is coupled to, and operatively controllable by, the radio communications circuitry.

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12. An antenna radiator assembly comprising:  
radio frequency communications circuitry;  
a ground plane;  
a radio frequency radiator element;

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a feed point electrically coupling the radio frequency radiator element to the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element;

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a first ground connector electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first ground contact point of the radio frequency radiator element;

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a switching unit; and

a second ground connector selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, the second ground connector electrically coupling the radio frequency radiator element at a second ground contact point of the radio frequency radiator element.

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13. An antenna radiator assembly as claimed in claim 12, wherein the first ground contact point is proximal to a first edge of the radio frequency radiator element.

5           14. An antenna radiator assembly as claimed in claim 13, wherein the second ground contact point is proximal to a second edge of the radio frequency radiator element.

10           15. An antenna radiator assembly as claimed in claim 12, wherein the feed contact point and second ground contact point are coupled at respective locations on the radio frequency radiator element so that when the second ground connector selectively couples the passive radiator element to the ground plane through the switching unit, the impedance of the radio frequency radiator element is  
15 substantially impedance matched to the radio frequency communications circuitry.

20           16. An antenna radiator assembly as claimed in claim 12, wherein the feed contact point and first ground contact point are coupled at respective locations on the radio frequency radiator element so that when the second ground connector is electrically isolated from the ground plane by the switching unit, and the first ground connector is electrically coupling the radio frequency radiator element to the ground plane, the impedance of the radiator element is substantially  
25 impedance matched to the radio frequency communications circuitry.

17. An antenna radiator assembly as claimed in claim 12, wherein the first ground connector provides a permanent electrical coupling of the radio frequency radiator element to the ground plane,

and wherein when the second ground connector electrically couples the radio frequency radiator element to the ground plane through the switching unit, the first ground connector also electrically couples radio frequency radiator element to the ground plane.

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18. An antenna radiator assembly as claimed in claim 12, wherein when the second ground connector is electrically isolated from the ground plane by the switching unit, the radio frequency radiator element provides for a first resonant frequency of substantially 850  
10 MHZ and a second resonant frequency of 1,800 MHZ.

19. An antenna radiator assembly as claimed in claim 18, wherein when the second ground connector is electrically coupled to the ground plane by the switching unit, the radio frequency radiator  
15 element provides for a third resonant frequency of substantially 900 MHZ and a fourth resonant frequency of 1,900 MHZ.

20. An antenna radiator assembly as claimed in claim 12, wherein when the second ground connector is electrically isolated from  
20 the ground plane by the switching unit, the ground plane has a longer effective length than when the ground connector is electrically coupled to the ground plane by the switching unit.

21. An antenna radiator assembly as claimed in claim 1,  
25 wherein when the second ground connector is electrically isolated from the ground plane by the switching unit, an effective length between the feed contact point and the ground plane is increased compared to when the second ground connector is electrically coupled to the ground plane by the switching unit.

22. An antenna radiator assembly as claimed in claim 1, wherein the switching unit is coupled to, and operatively controllable by, the radio communications circuitry.

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23. An antenna radiator assembly comprising:  
radio frequency communications circuitry; a ground plane;

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a radio frequency radiator element;

a feed point electrically coupling the radio frequency radiator element to the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element;

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a first ground connector electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first ground contact point of the radio frequency radiator element;

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a switching unit; and

a plurality of further ground connectors selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, the plurality of further ground connectors electrically coupling the radio frequency radiator element at respective ground contact points of the radio frequency radiator element.

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24. An antenna radiator assembly as claimed in claim 23, wherein the first ground contact point is proximal to a first edge of the radio frequency radiator element.

- 5            25. An antenna radiator assembly as claimed in claim 24, the respective ground contact points associated with the further ground connectors are proximal to a second edge of the radio frequency radiator element.